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**Japan's Value Added Market:
Wood Product Attributes and Competition**

Attribute Analysis: Interior Finish

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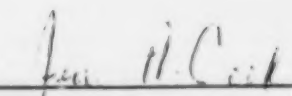
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All errors or omissions remain the responsibility of the authors.



Executive Summary

General Results

- ✧ Approximately 225 Japanese consumers provided the information in this report. They are mostly in their late thirties or early forties and most expect to buy or build a house within the next five years. About three-quarters already own their own house.
- ✧ Approximately 125 small builders provided information for this report. They primarily construct single family detached houses and operate in one of the three large metropolitan areas of Japan (Tokyo, Nagoya and Osaka).
- ✧ Approximately 60 architects provided information for this report and they also are located in one of the three large metropolitan areas of Japan.
- ✧ There is strong knowledge about formaldehyde emissions and consumers, designers and builders indicate a willingness to pay a small premium for products that have much lower emissions than current standards require.
- ✧ Health issues, such as emissions and minimal use of chemicals in finishing was of concern to all groups with the concern increasing as one approached the end user, that is from builder to designer to consumer.
- ✧ There was a strong indication that an independent quality assurance label would increase designers and consumers' level of confidence when purchasing wood products. The country of origin was not relevant. Equal numbers prefer a process driven and a product driven program.
- ✧ All 3 groups rank floors as the most important location for wood use in a house. Stairways and doors follow floors.
- ✧ Each group differs on the relative importance of attributes for interior finish items except that all groups consider location of manufacture as unimportant. The three most important attributes are how long it will last (durability), what it is made of (material) and where the wood interior finish item is located in the house (location).
- ✧ All groups prefer more durable interior finish items with life spans of over 15 years; over half of the respondents in each group favour life spans of 20 years or more.
- ✧ For all three groups wood is the most preferred material, followed by wood veneer and non-wood products such as steel and plastic.
- ✧ Health, an important attribute for all groups, resulted in all groups preferring a natural finish with some chemical finish ranking second.
- ✧ All groups prefer light or very light colours.
- ✧ Flooring is the most favoured location for a wood item in the house interior for all three groups and consumers expect this to grow the fastest in the next five years.

Opportunities

- ④ ¹Focus on flooring since this will be the largest growth segment and light coloured softwoods from BC would be suitable to meet attribute requirements. Since Japanese always remove their shoes at the door, a floor does not have to be a very "hard" wood.
 - ◆ Pine, Hemlock and Birch are the most suitable BC species.
 - ◆ Major competition to solid softwood flooring would be a wood veneer over a fibreboard core. This threat could be turned into an opportunity if BC were to produce softwood veneer for floor manufacture in Japan.
- ★ Timing is key.
 - ◆ Detailed market information is needed on distribution, pricing and most importantly current and future competition for the Japanese flooring market.
 - ◆ Market research needs to determine whether clear fine grained flooring is preferred by Japanese consumers or if the presence of certain "character marks" (also known as defects) would enhance the competitive position of BC flooring.
 - ◆ Particularly with Hemlock, technical work is needed on quarter, drying and processing.
 - ◆ The work needed to develop full business plans and operation is estimated at 18-24 months by which time the Japanese economy should be in recovery.

Wainscoting

- ④ There are existing markets for light coloured wood used for wainscoting. Information on defect level and distribution as well as a commitment to the market from a BC firm are all that is needed to enter the market since the manufacturing capacity already exists in BC.

Quality

- ④ Develop a quality assurance label to increase the confidence of Japanese consumers. This work is already underway and these results indicate the value of this process.

Other Opportunities

- ④ Stairways and stair railings also provide opportunities for increased use of BC softwoods due to the light colour and the expected growth in these product areas.
- ④ Exploring more natural finishes for existing interior products to differentiate BC products from others. This will provide a window of opportunity since its success will be imitated quickly by competing producers.
- ④ The use of wood mouldings is expected to shrink over the next five years and should be avoided due to intense competition both from tropical hardwoods and radiata pine.

¹ Additional work is currently underway to assess the attitudes of large home builders regarding wood flooring as an addendum to this FRBC project.

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1 Introduction

This report presents the results of personal interviews and surveys conducted in Japan from March 1998 to June 1998. Each of the six product groups are presented in separate reports starting with Wood Furniture followed by Outdoor Furnishings, Interior Finish, Wood Structural Members, Engineered Structural Products and Building Systems. This section summarizes the results for Interior Finish, which includes items such as moulding, cabinets, flooring, stairways, wainscoting, etc. Table 1 shows which groups were surveyed for each product group.

Table 1: Product Groups and Interview Groups

Product Group	Types of People Interviewed
Building systems	Small builders & consumers
Engineered structural products	Small builders & pre-cutters
Wood structural members	Small builders & pre-cutters
Interior finish	Small builders & designers & consumers
Wood furniture	Consumers & designers
Outdoor furnishings & decking	Consumers

All reports follow the same format. First there is a summary of the general questions for the product category for each group interviewed. The survey questions are summarized with minimal commentary. Many of the questions will be clear from the text but to facilitate ease of use the questionnaire is shown in Appendix 1. Following this summary are the results of the conjoint (or trade-off) analysis for each group interviewed². This includes both simple trade-offs and trade-offs between two variables. The third set of results is a brief summary of the market share analysis. This section briefly examines the implications of changing attributes on market share of different products. The last section summarizes the most meaningful results and identifies opportunities for BC producers.

Information regarding Interior Finish was collected from three market segments: consumers, designers and builders. Information was collected in Japan from April-June 1998 through direct interviews of 225 consumers, 50 architects and 170 builders located in one of the three major metropolitan areas (Tokyo, Osaka and Nagoya). Not all groups were asked all questions but all questions answered are in this report.

² For a full discussion of the methods used in this study please see the report titled "Introduction and Methodology for Wood Attribute Analysis."

2 Response to Questionnaire

2.1 Basic Demographics³

2.1.1 Consumer Demographics

Of the 225 respondents 83% are male and 17% are female. Most are over 30 years old and the average age ranges from the late thirties to the early forties, the prime house buying age group in Japan. Almost all are high school graduates. Over a quarter have completed University and another 28.2% have completed 2 years of University.

Since interior finish is most often purchased when consumers either buy a new house or replace their exiting house information on house purchase is of interest. In terms of who would make the house purchase decision, it is evenly split between the wife and the husband (50:50). Seventy-eight percent currently own a house and expect to upgrade within ten years and 22% do not own a house but expect to purchase on within the next ten years. Respondents expect to purchase a new house in 2.6 years on average. About half do not expect to purchase a new house within the next five years while a third expect to buy within the next 3-5 years. The remainder is planning on purchasing within the next two years.

2.1.2 Basic Builder Demographics⁴

The builders interviewed were the small house builders that are responsible for most of the wood house construction in Japan. Respondents were asked to identify the type and number of houses built in 1997. Table 2 shows the average number of houses per respondent by house type.

Table 2: Average Number of Houses Built by Construction Method

Type of House Construction	Avg. no. of houses/respondent
Post & Beam (traditional)	13.4
2 by 4	14.0
hybrid (mix of P&B and 2 by 4)	10.3
Prefabricated	23.2
Steel/Concrete	42.0

Results show that of the 3,720 houses built by respondents:

³ Results are presented in six separate reports based on product groups, thus some information is repeated. Such repetition will always be footnoted.

⁴ Results are presented in six separate reports based on product groups, thus some information is repeated. Such repetition will always be footnoted.

- ◆ 56.4% are traditional post and beam,
- ◆ 22.6% are 2 by 4,
- ◆ 13.2% are hybrid houses (a mix of post and beam and 2 by 4 including mixes of concrete basements and wood stories),
- ◆ 4.1% are steel or concrete and
- ◆ 3.7% are prefabricated houses.

There is a fairly even distribution of the size of house building firms represented with 19% building between 1-5 houses per year, 25% building between 6 and 10, 24% building 11-20 and 32% building over 20 houses annually.

2.2 Quality Issues⁵

Additional questions were included to assist the Wood Products Quality Council of Canada.⁶ Results may be of interest to organizations not currently involved in this initiative. Information is first presented for consumers and then for the designers.

2.2.1 Consumers

It is clear that the consumer respondents react positively to quality assurance labels, particularly for houses and interior finishing items as shown in Table 3.

Table 3: Would an independent quality assurance label increase your level of confidence when purchasing:

Product	% that indicated an increase
Wood furniture	72
Building systems	83
Interior finish	80
Outdoor furnishings	56

The most confidence placed in a quality label is from the country of purchase, that is a Japanese label (47% of respondents). Thirty two percent of consumers do not care where the label originated and

⁵ Results are presented in six separate reports based on product groups, thus some information is repeated. Such repetition will always be footnoted.

⁶ The Wood Products Quality Council of Canada is an industry and FRBC supported organization committed to developing quality standards for the secondary wood sector of BC. It is being organized through the Centre of Advanced Wood Processing (CAWP) located at the University of British Columbia (UBC). Questions on quality were designed by Dr. Robert Kozak (CAWP, UBC)

21% prefer a label from the country of manufacture. That is, half prefer a Japanese label and the other half either prefer a label from the country of manufacture or didn't care.

Respondents consider testing wood products to some quality standard as important or extremely important. The average (on a 5 point scale with 1 = not at all important and 5 = extremely important) was 3.97. Almost all respondents indicate that this standard ranged from important (3) to extremely important (5).

Respondents are fairly evenly split when asked their preference between a quality assurance program that certifies quality in the **process** (*how well the product is manufactured*) or quality in the **product** (*how well the product fulfills its intended function*). Slightly less than half (45.5%) prefer process while slightly more than half (54.5%) prefer product.

Respondents were also asked to identify the relative importance of several factors in determining the quality of wood products. Results are shown in Table 4 with 1 = not at all important and 5 = extremely important. When reading the table, the higher the number the more important the factor.

Table 4: Relative Importance of Quality Factors

Factor	Relative importance
Product conformance <i>is product defect-free & meet known standards?</i>	4.53
Product serviceability <i>is the product easy to maintain and is service speedy and dependable?</i>	4.44
Product reliability <i>if used properly, will the product operate without failure over a specified time?</i>	4.40
Product performance <i>how does the product perform in its intended function?</i>	4.38
Product durability <i>how much can the product be used before it needs to be fixed or replaced?</i>	4.33
Product aesthetics <i>how does the product look, feel, etc. and is there a variety of styles?</i>	4.22
Product features <i>what types of features does the product have relative to the competition</i>	3.50
Perceived quality <i>does the manufacturer have a reputation or a recognizable brand name?</i>	3.30

It is interesting to note that product conforming to set quality standards is the highest preferred feature in determining the quality of wood products.

2.2.2 Designers

Designers were also asked if an improved consideration of quality for a variety building products would increase their confidence level in a variety of products including wood furniture. Results are shown in Table 5.

Table 5: Would an independent quality assurance label increase your level of confidence when purchasing:

Product	% that indicated an increase
Wood furniture	66
Building systems	72
Interior finish	86
Outdoor furnishings	42

- ★ It is clear an independent quality assurance label would have an impact for these designers for interior finish items, wood furniture and building systems.
- ★ Wood furniture would benefit greatly from a quality assurance label.

Two thirds of designers would have increased confidence in wood furniture if carrying a quality label they have little concern over whether the label is from the country of manufacture or the country of purchase. This provides strong support for a "Made in BC" quality label. At the same time they rank a quality standard as being relatively important (3.6 on a scale of 1-5). Only a slight majority prefers a quality label based on process to one based on product (29:21).

Respondents were also asked to identify the relative importance of several factors in determining the quality of wood products. Results are shown in Table 6 with 1 = not at all important and 5 = extremely important.

It is clear that aesthetics, performance and reliability are the most important product quality attributes in wood products. It is very interesting to note that aesthetics, the beauty of the specific piece of wood, ranks the highest of all factors.

Product features and maintenance requirements rank relatively low but not as low as perceived quality, a concept not yet familiar to many in Japan.

Table 6: Relative Importance of Quality Factors

Factor	Relative importance
Product aesthetics <i>how does the product look, feel, etc. and is there a variety of styles?</i>	4.40
Product performance <i>how does the product perform in its intended function?</i>	4.34
Product reliability <i>if used properly, will the product operate without failure over a specified time?</i>	4.32
Product conformance <i>is the product defect-free and does it meet with known standards?</i>	4.14
Product durability <i>how much can the product be used before it needs to be fixed or replaced?</i>	4.14
Product serviceability <i>is the product easy to maintain and is service speedy and dependable?</i>	3.84
Product features <i>what types of features does the product have relative to the competition</i>	3.31
Perceived quality <i>does the manufacturer have a reputation or a recognizable brand name?</i>	3.14

2.3 Health Issues⁷

2.3.1 Consumers and Health Issues

To gauge concerns over health issues several question were asked regarding formaldehyde emissions as well as willingness to pay for lower emissions. Two thirds of the respondents are aware of the growing concern over formaldehyde emissions in Japan. When asked if there was interest in a panel with 1/50th of the current emission standard almost three quarters of respondents indicate an interest. However the most interesting result is that 77% of all respondents are willing to pay a small premium for a panel with much lower formaldehyde emissions than current standards.

2.3.2 Builders and Health Issues

Over 95% of all respondents indicate that they are aware of the growing concern over formaldehyde emission in Japan and are interested in a panel with 1/50th of the current emission standard. Slightly less than half (44%) are willing to pay a small premium for a panel with much lower formaldehyde emissions than current standards.

⁷ Results are presented in six separate reports based on product groups, thus some information is repeated. Such repetition will always be footnoted.

2.4 Answers to Questionnaire on Interior Finish

2.4.1 Consumers

Interior finish includes a wide variety of products such as cabinets, flooring, stairs, moulding, trim, wainscoting, ceilings, etc. While wood has been losing market share over the past decade there is still a very large market for wood interior finish due to the large number of housing starts (over 1 million per year with wood accounting for almost half of these).

Respondents indicated which were the most important product attributes for wood finishing products. Results are shown in Table 7 which calculates the score by assigning 3 points for a first place ranking, 2 points for a second place ranking, 1 point for a third place ranking and 0 points if the attribute was not ranked.

As with many other products examined durability is of key concern⁸. The second most important attribute is material, followed by health and colour.

Table 7: Most Important Attributes for Interior Finish for Consumers

Attribute	Score
Durability - (<i>how long they will last</i>)	159
Material - (<i>metal, wood, plastic</i>)	146
Health - (<i>emissions of harmful gasses</i>)	120
Colour	104
Location of wood feature - (<i>moulding, flooring etc.</i>)	84
Maintenance required	49
Species of wood	8
Source of supply	8

Figure 1 shows respondents' preference for different materials. Scores are calculated by assigning 3 points for a first place ranking, 2 points for a second place ranking, 1 point for a third place ranking and 0 points if the attribute was not ranked.

It is clear that wood is clearly the most preferred material for interior finish. This combined with a low concern for source of supply or species of wood suggest opportunities may exist for interior finish wood products from BC.

⁸ Price, while always important is considered in the conjoint analysis in terms of what consumers are willing to trade for changes in price. This report includes this result following the information from the questionnaire,

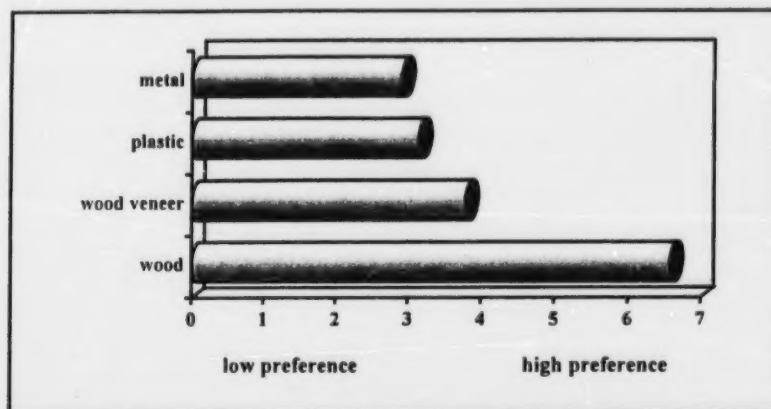


Figure 1: Consumers' Material Preference for Interior Finish

Interior finish includes a wide variety of different products. Respondents were asked to indicate the five most preferable locations for a wood interior finish item. Scores in Table 8 were calculated by assigning 5 points for the first choice, 4 points for the second choice and so forth with the fifth choice assigned 1 point.

Table 8: Most Preferable Location for Wood Interior Finish Items for Consumers

Location	Score
flooring	520
stairways	280
doors	278
stair railings	162
wainscot	126
cabinet doors	106
moulding	82
windows	60
kitchen cabinets	55
bathroom cabinets	2

It is clear the vast majority of consumers would prefer to use wood flooring. There exists opportunities for BC producers to use some of our naturally hard species (Larch, Birch and even Hemlock) to develop flooring for this market. In addition new chemical treatments enable the hardening of the surface of softer woods such as Pine and Spruce. Other opportunities exist in stair parts and railings, doors and wainscoting.

2.4.2 Designers

Designers also ranked the five most important attributes in interior finish. Table 9 summarizes the results and calculates scores by assigning 5 points for a first place ranking, 4 points for a second place ranking, 3 point for a third place ranking and so on with no points if the attribute was not ranked.

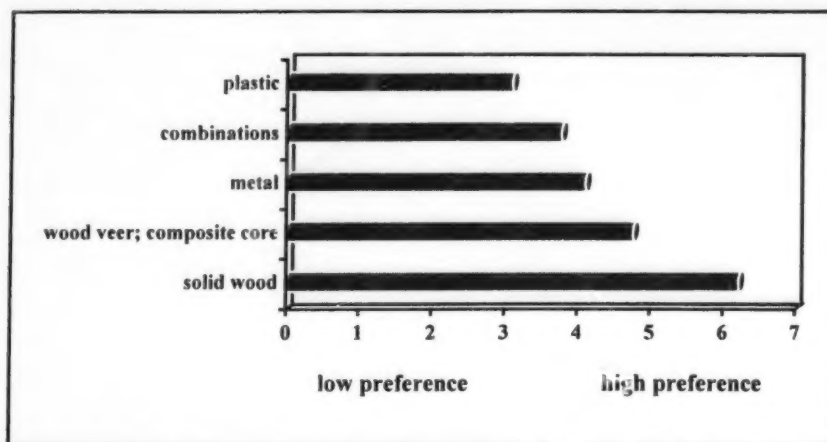
It is very interesting to note that the country of origin of material is of little importance to designers. Their primary concerns are with material selection, durability and where it will be used. The species of wood is also important given the scoring of material selection among all attributes. Specific style, level of maintenance required, and colour is low on the list of important attributes. Health is at the mid point in terms of importance.

Table 9: Relative Importance of Attributes for Interior Finish for Designers

Attribute	Score
Material	155
Durability (e.g. how long they will last)	151
Location of wood feature (e.g. moulding, flooring etc)	123
Species of wood	99
Health (emissions of harmful gasses)	75
Colour	51
Maintenance	45
Style	36
Source of Supply	7

With material being the most important attribute for interior finish designers were asked to rank their preference for different materials with 7 = a very high preference and 1 = a very low preference. Figure 2 shows that solid wood is the overwhelming preferred material. This is particularly important since there has been a steady decline of wood used in interior finish in Japanese houses in order to reduce costs. However the designers (as well as the consumers) prefer wood for these items.

Figure 2: Designers' Preference for Materials for Interior Finish



Designers were also asked to rank the five most preferable locations for a wood interior finish. Assigning 5 points for the first ranked location, 4 points for the second and so on generated the scores shown in Table 10.

Table 10: Designers' Scores for Most Important Location in a House for Wood

Product	Score
flooring	183
stairways	103
doors	77
wainscoting	47
stair railings	24
moulding	24
windows	22
cabinet doors	18
kitchen and bathroom cabinets	<2

Designers consider flooring the most important area for a wood interior item. It must be noted that this is not restricted to hardwoods or even "hard" softwoods. Since the Japanese always remove their shoes upon entering a house the floors need to withstand only slippers or stocking feet. This location mirrored the response from consumers regarding the most important location for a wood feature item.

Several items of interest emerge from this table:

- ⊕ a healthy interest in wood stairways, wainscoting and doors indicate product areas for BC to consider for increased exports,
- ⊕ the low rating for kitchen and bathroom cabinets suggest that this is a niche which does not have a high potential for growth,
- ⊕ doors seem to be a better product to manufacture than windows.

While Table 10 shows the current preference, designers were also asked to indicate how they expected the use of wood interior finish to change over the next five years. Results are shown in Table 11.

Table 11: Designers' Expected Change in Wood Interior Finish Items

Product	% Change in five years
flooring	14.6
stairways	6.0
doors	8.5
wainscoting	0.8
stair railings	4.5
moulding	-2.3
windows	1.1
cabinet doors	0.3
kitchen and bathroom cabinets	-3.7

Wood moulding and cabinets for kitchens and bathrooms are expected to decline slightly in the next five years. Wainscoting, windows and cabinet doors are expected to experience very moderate increased use⁹. Flooring, doors and stairways are expected to experience substantial growth.

2.4.3 Builders

Builders also ranked the five most important attributes in interior finish. Table 12 summarizes the results and calculates the score by assigning 5 points for a first place ranking, 4 points for a second place ranking, 3 point for a third place ranking and so on with no points if the attribute was not ranked.

⁹ It must be noted that overall use of wood for an interior product is based on expected changes in use, overall housing starts and changes in house sizes. This table only examines one of these factors.

Table 12: Relative Importance of Attributes for Interior Finish for Builders

Attribute	Score
Price	206
Durability (e.g. how long they will last)	180
Health (emissions of harmful gasses)	155
Location of wood feature (e.g. moulding, flooring etc)	140
Material	110
Maintenance	89
Species of wood	78
Colour	47
Source of Supply	9

There are some differences on how builders ranked attributes compared to consumers and designers.

- ⊕ They rank colour and material lower than consumers do, but similar to designers.
- ⊕ Builders and consumers considered health more important than did designers.
- ⊕ All three groups consider durability and location of wood feature as important attributes and source of supply as unimportant.

Figure 3 shows builders' preference for different materials based on a scale of 1-7 with 7 = to a very high preference.

It is clear that wood is the material for choice for builders as well as consumers and designers. It is interesting to note that both finger joint laminate and/or wood veneer over a composite core score well below solid wood but far above metal or plastic for builders, designers and to a lesser extent consumers.

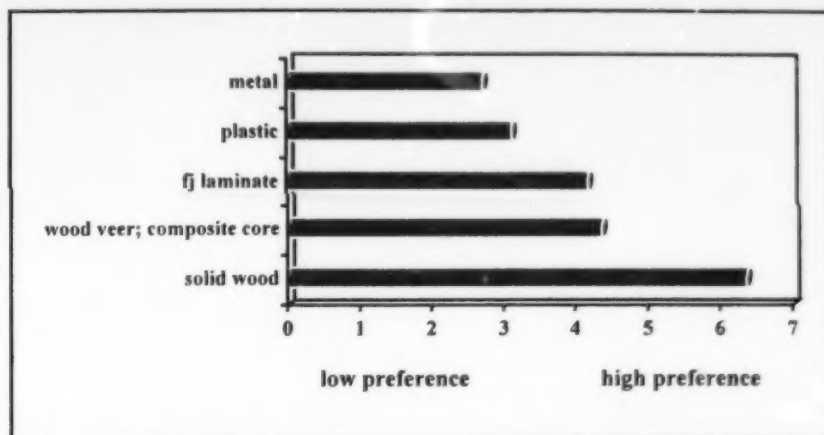


Figure 3: Builders' Material Preference for Interior Finish

Interior finish includes a wide variety of different products. Respondents were asked to indicate the five most preferable locations for a wood interior finish item. Table 13 shows the scores calculated by assigning 5 points for the first choice, 4 points for the second choice and so forth with the fifth choice assigned 1 point.

Table 13: Builders' Scores for Most Important Location in a House for Wood

Product	Score
flooring	382
stairways	235
doors	182
wainscoting	166
windows	106
stair railings	77
moulding	72
cabinet doors	18
cabinet doors	18
kitchen cabinets	15
bathroom cabinets	8

Rankings are similar to those for both consumers and designers. One of the key differences is the builders' higher ranking for wood windows. While flooring is the location ranked first it does not score as high as it did for consumers and designers.

- ⊕ The best opportunities for solid wood interior items are flooring and stairways followed by doors, wainscoting and windows.
- ⊕ Cabinets of all sorts rank low and provide the least opportunity for volume sales.

3.0 Trade-Off Analysis: Interior Finish

For each product group designers and some consumers were asked to make choices between different types of products. Using trade-off analysis (or conjoint analysis) respondents are forced to trade off different attributes of a product. For example they would not be able to get all the best possible attributes at the lowest possible price but must make choices concerning how they will spend their limited resources. The methodology is complex and will not be discussed in this paper however an example of the type of choice they had to make is shown in Table 14. Each respondent had to make 20 such choices for wood furniture.

Table 14: Example of Choice Made for Interior Finish

Please select one of the 4 choices shown below.			
1	2	3	4
♦ 10% less than current price	♦ at current price levels	♦ 10% above current price	None of the choices are suitable
♦ dark colour	♦ medium colour	♦ light colour	
♦ wall	♦ ceiling	♦ floor	
♦ replace every 10 years	♦ replace every 15 years	♦ replace every 20 years	
♦ some chemical finish	♦ total chemical finish	♦ natural finish	
♦ fibreboard core with laminate	♦ solid hardwood	♦ solid softwood	

There are several types of results that will be reported. First will be the relative proportion of respondents that chose a certain level for a specific attribute. These simple trade-offs are discussed briefly. Second will be how respondents made trade-offs among different attributes. This helps determine if respondents are willing to pay a premium for certain attributes. The third type of analysis reported is in the market share section and involves "what if" analysis. For example how much market share would a certain product achieve assuming our respondents are representative of all consumers or designers. Product attributes and their levels were selected with input from industry and government personnel both in BC and Japan. The last section summarizes key results and apparent opportunities.

The results of these attribute analyses will feed into the international trade analysis to assess BC's relative competitiveness in a global market for specific product groups. They will also provide direction for determining which species in BC can be best used to meet Japanese customer requirements and lead to a revision of both key results and opportunities.

3.1 Consumers

For each product group consumers were asked to make choices between different types of products. Using trade-off analysis (or conjoint analysis) respondents are forced to trade off different attributes of a product. For example they would not be able to get all the best possible attributes at the lowest possible price but must make choices concerning how they will spend their limited resources.

3.1.1 Simple Trade-Offs

Each respondent had to make a choice between 3 different type of wood furniture described by one level from each of the six attributes. They could also select none of the choices given. Respondents had to do this twenty times with different levels used for the same attributes. Levels and attributes were chosen with input from the project steering committee and additional input from BC representatives in Japan. They are shown in Table 15.

Table 15 shows the proportion of times a certain level within an attribute was selected. The statistical software used for conjoint analysis also completes statistical tests to ensure that differences are significant and not due to random chance.¹⁰ Because there are over 2,000 choices made by over 125 consumers even a small difference can have meaning.

The way this table can be read follows:

- 27.6% of the time consumers selected a price that was 10% less than current prices,
- 28.2% of the time consumers selected a price that was equal to current prices.

Because there are more than 2,000 selections the impact from the other attributes is minimized.

Price There are sizeable market segments among consumers both for low priced interior finish and higher priced interior finish items. Over 40% of respondents indicate a willingness to pay at least a 10% premium compared to current prices.

Colour Over half of respondents select either light or very light colour, confirming the preference for light coloured wood. Of interest is the fact that almost a quarter of respondents chooses dark coloured materials.

Location Flooring is the location selected by over a third of respondents indicating a strong potential for continued or increased sales of wood flooring. This confirms the results of the questionnaire. Only 15% select no wood feature. This suggests that the recent trend towards a reduction in the amount of wood used in interior finish in Japan may reverse itself and wood use may level off or increase.

¹⁰ Within each attribute there was a significant difference between levels tested using a Chi Square at $\alpha = .01$

Table 15: Consumers' Relative Selection of Levels within Attributes for Interior Finish

Attribute Level	% of time selected	Attribute Level	% of time selected
Price		Durability	
10% less than current prices	27.6%	replace every 10 years	19.7%
current prices	28.2%	replace every 15 years	24.2%
10% more than current prices	25.6%	replace every 20 years	27.1%
20% more than current prices	18.6%	lasts as long as the house	28.9%
Colour		Finish & Health	
very light colour	25.1%	natural finish	43.4%
light colour	26.3%	uses some chemical finish	31.1%
medium colour	25.6%	total chemical finish used	25.5%
dark colour	23.1%		
Location		Material	
wood used for floor	35.5%	solid hardwood	28.0%
wood used in wall	24.4%	solid softwood	26.2%
wood used in ceiling	25.1%	fibreboard core with veneer	25.1%
no wood feature used	15.0%	fb core with non-wood laminate	20.7%

Durability Japanese consumers select long lasting products with almost two thirds selecting interior finish items which would last as long as the average house life in Japan (20 years plus). Any products targeted towards this market should be designed, manufactured and finished to require minimum maintenance and with at least a twenty-year life span.

Finish and Health Almost three-quarters select either a natural finish or some chemical finish. There was a sizable segment (43.4%) that select natural finish, an attribute that could distinguish BC interior finish products from others currently in the market. This is a key finding since few of the existing interior finish items available in Japan stress this attribute. This could provide BC products with a window of competitive advantage.

Material It is surprising that solid softwood is selected almost as frequently as solid hardwood. Currently hardwoods are used more frequently for interior finish than softwood indicating an opportunity for additional solid softwood items. The lowest ranked material was fibreboard core with non-wood laminates, the item thought to pose the most serious threat towards wood products used for interior finish.

3.1.2 Two Way Trade Offs

Results also show how two different attributes interact with each other. People making purchasing decisions do not rely on a single product attribute in making their selection but rather on many attributes and how they interact with each other.

Only certain two-way trade offs are presented. Those interactions omitted are for the following reasons: 1) they provide little useful information, 2) there is little difference between different combinations or 3) statistical analysis indicated unreliable results. The results are summarized without presenting the tables or details of analysis for brevity.

Interaction between Price and Location

- ⊙ If consumers were willing to pay above average prices for interior finish items it would be for flooring and to a lesser degree, for walls.

Interaction between Price and Colour

- ⊙ Respondents are not willing to pay any premium for dark woods but did indicate some willingness to pay premiums for light and very light colours.

Interaction between Price and Material

- ⊙ There is more willingness to pay premiums for solid wood products.
- ⊙ It is interesting that there is almost *equal willingness to pay premiums for solid softwoods and hardwoods*.
- ⊙ Consumers want a discount if they do not use a wood feature item.

Interaction between Location and Durability

- ⊙ There is a strong indication that flooring is expected to last 20 years or more while wood features in walls (e.g. moulding and wainscoting) and ceilings could require replacement every 15 years.

Interaction between Durability and Health and Finish

- ⊙ All respondents indicate a strong desire to increase the durability of products, regardless of type of feature.

Interaction between Durability and Material

- ⊙ Solid wood materials are expected to last longer than those with fibreboard cores and veneer or non-wood laminates do.
- ⊙ There is no difference in life span expectations for hardwood or softwood.

3.2 Designers

3.2.1 Simple Trade-Offs

The 50 designers also made choices between different types of products. Table 16 shows the attributes and levels that were used when designers made choices. These were selected with input from industry and government personnel both in BC and Japan.

Price About 55% of respondents select current prices or lower prices. However the remaining 45% are willing to pay premiums of up to 20% over current prices depending on other attributes.

Table 16: Designers' Relative Selection of Levels within Attributes for Interior Finish

Attribute Level	% of time selected	Attribute Level	% of time selected
Price		Durability	
10% less than current prices	26.3	replace every 10 years	21.2
current prices	29.4	replace every 15 years	25.8
10% more than current prices	25.4	replace every 20 years	26.6
20% more than current prices	18.9	lasts as long as the house	26.5
Colour		Finish	
very light colour	27.1	no chemical finish	35.9
light colour	28.9	uses some chemical finish	34.8
medium colour	24.2	total chemical finish used	29.3
dark colour	19.9		
Location of wood use		Material	
wood used for floor	34.6	solid hardwood	24.8
wood used in wall	28.9	solid softwood	25.2
wood used in ceiling	29.4	fibreboard core, veneer	
no wood feature used	8.4	laminate	27.9
		fibreboard core with non-wood laminate	22.2

Colour Light or very light colours are selected in almost two thirds of the cases. This strong preference for light colours should continue as the Japanese adjust to a living space that is no longer based on use from the floor level (i.e. sitting on the floor) but from a typical western furniture height. Lighter colours expand the perception of space. There is a small (~20%) niche for dark coloured interior finish items.

Location of Wood Use in Interior Finish Floors are the area of choice and are selected by over a third of all respondents. The most interesting aspect is the almost unanimous desire among designers to use some form of wood feature with less than 10% selecting no wood feature. This attribute (location) is considered to be one of the three most important for designers.

Durability While results seem evenly split, the average Japanese house only lasts an average of less than 25 years. Thus over 60% of respondents indicate that interior finish should last as long as the house. This was the second most important attribute and indicates that any interior finish items produced in BC for sales in Japan should last at least twenty years. The concept of replacement every decade or so during renovation is NOT a concept with much acceptance in Japan.

Finish While a natural finish with no chemicals is preferred, there is a general acceptance of chemical use for interior finish items. However, those selecting no chemical finish may constitute a sizeable market niche. The omission of harmful gasses ranks at the mid point of important attributes and it would be worthwhile to explore this niche for products finished with oil, wax or other "natural" finishes.

Material This is the most important attribute for designers. It is surprising that designers prefer a fibreboard core with a veneer overlay to solid woods. It is also surprising that they select solid softwood over solid hardwood. It must be noted that differences between different materials were not as great as for other attributes¹¹.

3.2.2 Two Way Trade-Offs: Interior Finish

Results also show how two different attributes interact with each other. People making purchasing decision do not rely on a single product attribute in making their selection but on many attributes and how they interact with each other. Detailed results are not discussed by only results that have some practical application.

Interaction between Price and Colour

- ⊕ Designers are more willing to pay a premium for the lighter colours.
- ⊕ Light colours receive a higher premium than very light colours.
- ⊕ Dark colours rarely receive a premium and often require a discount over current prices that is designers are willing to use dark colours if they are less expensive.
- ⊕ Designers are much more willing to pay a 10% premium than a 20% premium.

Interaction between Price and Location of Wood Use

- ⊕ Designers are much more likely to pay a premium for wood used in floors, followed by walls.
- ⊕ They are much more willing to pay a 10% premium rather than a 20% premium.
- ⊕ Designers are relatively unwilling to pay a premium for wood used in ceilings.

Interaction between Price and Material

- ⊕ Material is the most important attribute for designers.
- ⊕ At a 10% discount, solid softwood is the most selected material.
- ⊕ At current prices, solid hardwood is the most preferred material.
- ⊕ At both levels of premiums, solid softwood is the most preferred material while at current prices it is not a clear favourite.
- ⊕ At 20% premiums solid softwood is selected much more than any other alternative with fibreboard core with veneer laminate a distance second.
- ⊕ There is strong support for solid softwood for interior finish both as a lower priced and higher priced alternative to solid hardwood.
- ⊕ Fibreboard core with laminate finish is least selected in all price categories.

¹¹ Results for this attribute were not statistically significant at $p < .05$ but were significant at $p < .10$ using a chi-square on the raw data.

- ⊙ Fibreboard core with veneer finish is selected third most frequently but drops precipitously once the price premium reached 20%.

Interaction between Colour and Location

- ⊙ In walls, light and very light colours are selected much more frequently than medium or dark colours.
- ⊙ In floors all colours are selected frequently with dark colours slightly below the rest and very light colours slightly above the rest.
- ⊙ For ceilings dark colours are rarely were selected with light colours being the most popular selection.

Interaction between Colour and Material

- ⊙ Softwood is selected as a very light colour most frequently while hardwood is selected only as a light colour which indicates that one of the perceived advantages of softwood over hardwood is the ability to be very light in colour.
- ⊙ Non-wood laminates are the only material with equal preference for both very light and dark colours.
- ⊙ For all materials, lighter colours are selected more often than medium or darker colours.

Interaction between Location and Durability

- ⊙ Floors are expected to last 15-20 years with a steep drop off for ones that only last 10 years.
- ⊙ Walls are expected to last even longer, that is either 20 years or the life of the house.
- ⊙ Ceilings are evenly split between all 4 time durations.

Interaction between Location and Material

- ⊙ For all categories, a wood veneer over a fibreboard core was selected more often than any other material.
- ⊙ The preferred material for floors (the most attractive location and the one expected to grow the fastest) is a fibreboard core with veneer laminate followed by solid softwood. It is interesting that softwood is selected more frequently than solid hardwood.
- ⊙ For floors, non wood laminates is selected least frequently.
- ⊙ The gap between the fibreboard core with veneer laminate and other materials is largest for flooring.
- ⊙ In walls and ceilings, solid hardwood is selected almost as frequently as fibreboard core with veneer laminate.

3.3 Builders

3.3.1 Simple Trade-Offs

Builders were also asked to make choices between different types of products. Table 17 shows the attributes and levels that were used when designers made choices. These were selected with input from industry and government personnel both in BC and Japan.

Table 17: Builders' Relative Selection of Levels within Attributes for Interior Finish

Attribute Level	% of time selected	Attribute Level	% of time selected
Price		Durability	
10% less than current prices	39.3	replace every 10 years	25.7
current prices	33.0	replace every 15 years	25.7
10% more than current prices	20.1	replace every 20 years	22.3
20% more than current prices	7.5	lasts as long as the house	26.3
Colour		Finish	
very light colour	26.4	no chemical finish	46.2
light colour	28.4	uses some chemical finish	31.6
medium colour	24.2	total chemical finish used	26.3
dark colour	21.0		
Location of wood use		Material	
wood used for floor	39.7	solid hardwood	27.1
wood used in wall	28.6	solid softwood	25.7
wood used in ceiling	23.0	fibreboard core, veneer	
no wood feature used	8.7	laminate	26.4
		fibreboard core with non-wood laminate	20.8

Price Among builders there is only a small niche willing to pay a premium and almost no respondents are willing to pay more than a 10% premium. This is much lower than for consumers and designers. This indicates that price is of greater concern to builders than to their customers.

Colour Once again light and very light colours are selected by over half of the builders. There is near unanimity among consumers, designers and builders that light or very light colours are preferred since they are selected most frequently but with sizable niches willing to accept medium and dark colours.

Location of Wood Use Again there is near unanimity between all 3 groups that the floor is the most preferred location for wood use. The wall and ceiling followed in priority. There is negligible interest in not using wood for a feature item.

Durability After price, builders consider this the most important attribute. There is no significant difference between the four levels of durability. This is much different than the results for consumers or designers, where respondents indicate a preference for more durable interior finish items.

Finish Builders prefer a natural finish, which uses either no chemicals or minimum chemicals. This is consistent with consumers and designers.

Material Builders prefer solid hardwood, followed by fibreboard core and solid softwood. These three are relatively close in preference with a fibreboard core and a non-wood laminate ranking last. This differed from consumers who select solid softwood over a veneered core and designers who select a veneered core most often, followed by solid softwood and then solid hardwood.

3.3.2 Two Way Trade-Offs: Interior Finish

Results also show how two different attributes interact with each other. People making purchasing decision do not rely on a single product attribute in making their selection but on many attributes and how they interact with each other.

Interaction between Price and Colour

- ★ At current prices Builders select light and very light colours much more frequently.
- ★ If prices increase by 10% then medium and light colours are selected more frequently.
- ★ There is little correlation between colour and willingness to pay a premium for builders.

Interaction between Price and Location

- ★ Builders are willing to pay premiums for wood use on floors followed by walls.
- ★ They also expect a discount if no wood is used.
- ★ Builders are very price sensitive regardless of location of wood.

Interaction between Price and Finish

- ★ Builders select a premium price most frequently for either a natural finish or a totally chemical finish (this is logical since a completely chemical finish should also add to the properties of the interior finish item).
- ★ A small but sizable number of builders are willing to pay 20% premium for natural finishes.

Interaction between Price and Material

- ★ It is very interesting that builders are willing to pay a 10% premium for solid softwood more frequently than for fibreboard core with veneer (2nd), fibreboard core with non-wood laminate (3rd) and lastly solid hardwoods.
- ★ If prices increase for all materials equally then solid softwood would gain market share.

Interaction between Colour and Location

- ★ Light and very light colours are preferred but sizeable numbers select medium and dark colours.
- ★ Builders seem to have little preference for specific colours for specific locations except they do not select dark colours for walls very often.

Interaction between Location and Finish

- ★ Builders select a chemical finish most frequently for floors and a natural finish most frequently for ceilings.

4 Market Simulation

The conjoint analysis software enables analysis of market share potential and changes for different products with various levels of attributes. This allows calculation of potential market share given the production of various styles of furniture. While not all possible combinations will be calculated or shown the potential for furniture from BC will be explored by presenting several scenarios. For this analysis the results from designers and consumers are combined to produce sufficient responses for statistical analysis.

4.1 Flooring

The first market share run for flooring was to determine a base line for different materials. Results are shown in Table 18.

Table 18: Market Share for Flooring Based on Material

HW flooring	SW flooring	fb core with veneer	fb core with laminate	none of these
current prices	current prices	current prices	current prices	
light colour	light colour	light colour	light colour	
20 years	20 years	20 years	20 years	
some chemical finish	some chemical finish	some chemical finish	some chemical finish	
23.4%	22.5%	22.7%	17.3%	13.7%

- ⊛ Solid softwood flooring should capture roughly equal market share as solid hardwood and a wood veneer over a fiber board core.
- ⊛ If the colour for solid softwood flooring were a very light colour then the market share would surpass hardwood and reach 25.7%. This presents some opportunities for species such as Hemlock that can be sorted to produce very light colours.
- ⊛ If a natural finish were used for softwood flooring with the remaining attributes as in Table 17 then the softwood flooring would capture an amazing 33.6% of the market. Even if the price were to increase 10% solid softwood with the natural finish would capture 31.6% of the market.
- ⊛ However it would not be long before hardwood flooring followed suit and then the market share would decrease to 26.9%, still an increase over a partial chemical finish (rest of attributes as in Table 17).
- ⊛ Since some BC softwood species would require hardening this would constitute a total chemical finish. Using total chemical finish would only drop the market share to 21.9%, a small decline.

4.2 Walls

The first market share run for walls were to determine a base line for different materials. Results are shown in Table 19.

Table 19: Market Share for Walls Based on Material

Solid HW	Solid SW	fb core with veneer	fb core with laminate	none of these
current prices	current prices	current prices	current prices	
light colour	light colour	light colour	light colour	
walls	walls	walls	walls	
20 years	20 years	20 years	20 years	
some chemical finish	some chemical finish	some chemical finish	some chemical finish	
22.6%	21.3%	21.5%	16.3%	18.4%

- ⊙ Solid softwood wall features should capture roughly equal market share as solid hardwood and a wood veneer over a fiber board core (20-22%).
- ⊙ If the colour for softwood were to be produced in a very light colour the market share would surpass hardwood and reach 24.4%. This presents some opportunities for species such as Hemlock that can be sorted to produce very light colours.
- ⊙ If the material used on the walls is solid softwood with a natural finish (i.e. no chemicals used) then the market share for wood would grow to 32%. If hardwood were to follow suit the share for softwood would drop to 25.8%, still a substantial growth in share by changing only the finish.
- ⊙ If the price for softwood for walls were to increase to 10% over current market prices (with all else as in Table 19) the share for solid softwood would only drop to 20.5% increasing sales value and margins.
- ⊙ It is interesting to note that if the price for solid softwood used on walls was to increase by 10% over current prices and the wood was a very light colour the market share would increase marginally. This is likely due to both a high interest in very light coloured wood and the traditional Japanese association of price and quality. There is an assumption that if the price were higher then the quality would also be higher.

It is clear that a softwood product with a very light colour and a natural finish that uses no chemicals could command a premium. Of course other products, such as hardwood wall products, would follow suit. This scenario assuming hardwood follows suit in some areas (finish and price but not colour) is shown in Table 20.

Table 20: Market Share for Light Coloured, Premium Priced, Naturally Finished Walls

Solid HW	Solid SW	fb core with veneer	fb core with laminate	none of these
10% above current prices	10% above current prices	current prices	current prices	
light colour walls	very light colour walls	light colour walls	light colour walls	
20 years	20 years	20 years	20 years	
natural finish	natural finish	some chemical finish	some chemical finish	
25.1%	24.9%	21.4%	16.3%	12.4%

- ★ This scenario shows that moving wall material upscale in terms of natural finish, charging a price premium and switching to very light colours increases market share. Hardwoods have difficulty moving to the very light colours leading to a net gain for softwoods, particularly softwoods such as Hemlock and Pine.

4.3 Ceilings

The first market share run for walls was to determine a base line for different materials. Results are shown in Table 21.

Table 21: Market Share for Ceilings based on Material

Solid HW	Solid SW	fb core with veneer	fb core with laminate	none of these
current prices	current prices	current prices	current prices	
light colour	light colour	light colour	light colour	
20 years	20 years	20 years	20 years	
some chemical finish	some chemical finish	some chemical finish	some chemical finish	
22.6%	21.3	21.5%	16.3%	18.4%

- ★ Solid hardwood and softwood ranked equally at ~21% market share following closely behind fibreboard core with a veneer laminate. This suggests opportunities for properly sliced, dried, and sorted softwood veneer for appearance use in Japan.

materials. This indicates the value the Japanese put on very light colours which is a characteristic that BC softwoods can match.

- ⊛ Shifting to both very light colours and a natural finish (assuming all other materials remain as in Table 20) increases the market share to 35.3%. Of course solid hardwoods would be expected to follow suit reducing this to 28.6%, still a substantial market. In fact even with a 10% premium in price for the colour and finish solid softwoods would capture a market share of 26.1%. **Thus adding colour and finish attributes allows a premium to be charged with an increase in market share.**

4.4 Further Market Share Analysis

Numerous scenarios are possible in market share analysis and not all possibilities are shown in this report. Should BC producers desire additional analysis please contact the authors.

5 Key Results

5.1 Summary of Key Results

- ★ Approximately 225 Japanese consumers provided the information in this report. They are mostly in their late thirties or early forties and most expect to buy or build a house within the next five years. About three-quarters already own their own homes.
- ★ Approximately 50 architects provided information for this report and they also are located in one of the three large metropolitan areas of the main island of Japan.
- ★ Approximately 125 small builders provided information for this report. They primarily construct single family detached houses and operate in one of the three large metropolitan areas of the main island of Japan.
- ★ There is strong knowledge about formaldehyde emissions. Consumers, designers and builders indicate a willingness to pay a small premium for products that have much lower emissions than current standards required.
- ★ Health issues, such as emissions and minimal use of chemicals in finishing, are of concern to all groups with concern increasing from builder to designer to consumer.
- ★ There is a strong indication that an independent quality assurance label would increase designers and consumers' level of confidence when purchasing wood products. The country of origin is not relevant. Equal numbers prefer a process driven and a product driven program.
 - ◆ The most important quality factors for consumers are product conformance, serviceability, reliability, performance and durability.
 - ◆ For designers, product aesthetics is also important
 - ◆ The country of issuance is not important and respondents (both designers and consumers) are equally divided between a standard based on process and one based on product.
- ★ All 3 groups rank floors as the most important location for wood use in a house. Stairways and doors followed floors.
 - ◆ Consumers also rank wainscoting and cabinet doors quiet highly.
 - ◆ Builders also rank wainscoting and windows quiet highly.
- ★ Each group differs on the relative importance of attributes for interior finish items except that all groups consider the location of manufacture as unimportant. The three most important attributes are how long it will last (durability), what it is made of (material) and where the wood interior finish item is located in the house (location).
 - ◆ Consumers consider durability, material selection, health, colour and location of wood feature as the most important attributes (in rank order).
 - ◆ Designers are not as interested in colour as consumers but are quiet concerned with species of wood.

- ◆ Builders had the same list as consumers but in different rank order.
- ⊛ All groups prefer more durable interior finish items with life spans of over 15 years. Over half of the respondents in each group favour life spans of 20 years or more.
 - ◆ Consumers expect solid wood to last longer than other materials.
 - ◆ Consumers and designers expect floors to last the life of the house.
- ⊛ For all three groups, wood is the most preferred material, followed by wood veneer and lastly by non-wood products such as steel and plastic.
 - ◆ A wood veneer over a fibreboard or composite core is also ranked highly.
 - ◆ Builders and consumers rank solid hardwood as their material of choice followed closely a fibreboard core with a wood veneer and by solid softwood. Designers prefer a veneered fibreboard core.
 - ◆ Consumers, designers and builders are most willing to pay a small premium for solid wood items particularly for solid softwood.
- ⊛ All groups prefer a natural finish with some chemical finish ranking second.
 - ◆ Consumers and builders are more heavily biased towards using no chemicals in the finish while designers are more accepting of chemical use.
 - ◆ Builders are the only group indicating a willingness to pay a small premium for a natural finish.
- ⊛ All groups prefer light or very light colours.
 - ◆ Consumers are willing to pay small premiums for light and very light colour.
 - ◆ Designers associate light and very light colours most frequently with softwood.
- ⊛ Flooring is the most favoured location for a wood item in the interior of the house for all three groups. Consumers expect the use of wood in flooring to grow the fastest in the next five years.
 - ◆ For all three groups flooring is the location where they are most willing to pay a premium.
 - ◆ Consumers prefer very light colours for flooring.
 - ◆ Designers prefer a fibreboard core with a wood veneer for floors while builders and consumers prefer solid woods (both hardwood and softwood).
- ⊛ Solid softwood flooring should capture between 20-25% of the wood flooring market, the same share as solid hardwoods.
- ⊛ The lighter the colour and the use of natural finishes which contain no chemicals increases the share of solid softwood flooring.
- ⊛ Solid softwood would capture between 20-25% of the wood flooring market.

- ⊛ The lighter the colour and the use of natural finishes would increase market share for solid softwood used on walls.
- ⊛ Increasing prices would only decrease market share by a small amount.
- ⊛

5.1 Opportunities

Flooring

- Focus on flooring, as this will be the largest growth segment. Light coloured softwoods from BC would be suitable to meet this attribute requirement. Since the Japanese always remove shoes at the door, a floor does not have to be a very "hard" wood.
 - ◆ Pine, Hemlock and Birch are the most suitable BC species
 - ◆ Major competition to solid softwood flooring would be a wood veneer over a fibreboard core. This threat could be turned to an opportunity if BC are to produce softwood veneer for floor manufacture in Japan by Japanese firms
- Timing is key
 - ◆ Detailed market information is needed on distribution, pricing and most importantly current and future competitors for the Japanese flooring market
 - ◆ Market research is needed to determine whether clear fine grained flooring is preferred by Japanese consumers or if "character marks" (also known as defects) would enhance the competitive position of BC flooring
 - ◆ Particularly with Hemlock, technical work is needed on quarter sawing, drying and manufacture
 - ◆ The time needed to complete research, development, planning and operation is estimated at 18-24 months by which time the Japanese economy should be in recovery

Wainscoting

- There are existing markets for light coloured wood used for wainscoting. Information on defect level and distribution as well as commitment to this market from a BC firm are all that is needed to enter this market, since the manufacturing capacity exists in BC.

Quality

- Develop a quality assurance label to increase the confidence of Japanese consumers. This work is already underway and these results indicate the value of this process.

Other Opportunities

- Stairways and stair railings also provide opportunities for increased use of BC softwoods due to the light colour and the expected growth in these product areas.

- Exploring more natural finishes for existing interior products to differentiate BC products from others. This will only provide a window of opportunity, as its success will be imitated quickly.
- The market for wood mouldings is expected to shrink over the next five years and should be avoided due to intense competition from tropical hardwood radiata pine, and medium density fibreboard.

Appendix 1: Interior Finish Survey Questions for Builders, Designers and Consumers

General Questions for Builders

1. Please indicate how many houses you build in a year?

1-5 _____
 6-10 _____
 10-20 _____
 21 and over _____

2. Please indicate what type of houses you built in 1997.

Type of House	Number	% of total
traditional (Post and beam)	_____	_____
2 by 4 (platform frame)	_____	_____
hybrid (mix of post & beam and 2 by 4)	_____	_____
pre-fabricated	_____	_____
steel or concrete	_____	_____
		100%

3. Please indicate what type of houses you expect to build three years from now.

Type of House	Number	% of total
traditional (Post and beam)	_____	_____
2 by 4 (platform frame)	_____	_____
hybrid (mix of post & beam and 2 by 4)	_____	_____
pre-fabricated	_____	_____
steel or concrete	_____	_____
		100%

4. Which type of construction method would you prefer?

	Low preference					High preference	
traditional	1	2	3	4	5	6	7
traditional (panel frame)	1	2	3	4	5	6	7
2X4	1	2	3	4	5	6	7
2X4 (panel method)	1	2	3	4	5	6	7
pre-fabricated	1	2	3	4	5	6	7

5. Are you aware of the growing concern over formaldehyde emissions in Japanese homes?

YES _____ NO _____

6. Would you be interested in a panel with 1/50th of the formaldehyde emission levels of government standards?

YES _____ NO _____

6. Would you be prepared to pay a small premium for such a panel?

YES _____ NO _____

Questions for Builders on Interior Finish

10. Please rank the three most important of the following product attributes with number 1 being the most important.

- _____ Material (metal, wood, plastic)
- _____ Colour
- _____ Location of wood feature (e.g. moulding, flooring etc.)
- _____ Health (emissions of harmful gasses such as formaldehyde)
- _____ Durability (e.g. how long they will last)
- _____ Source of supply
- _____ Species in finish
- _____ Maintenance requirements
- _____ Price

11. Please indicate the relative preference for the material used in your interior finish.

	Low preference					High preference	
solid wood	1	2	3	4	5	6	7
wood veneer over composite core	1	2	3	4	5	6	7
metal	1	2	3	4	5	6	7
plastic	1	2	3	4	5	6	7
finger-jointed/edge laminated	1	2	3	4	5	6	7

12. Please rank the five most preferable locations for a wood interior finish item with 1 being the most preferred location.

- _____ moulding
- _____ flooring
- _____ wainscoting (wall panels part way up from floor)
- _____ windows
- _____ doors
- _____ stairways
- _____ stair railings
- _____ cabinet doors
- _____ kitchen cabinets
- _____ bathroom cabinets

General Questions for Consumers

sex female _____ male _____
age 20 and over _____ 30 and over _____ 40 and over _____ 50 and over _____ 60 and over _____
education mandatory _____ high school graduate _____ university/college _____
graduate institute _____
income (000's) 300Y _____ 300 - 500Y _____ 500-700Y _____ 700-1000Y _____ 1000 _____

Who will make the big purchase decisions?

wife _____ husband _____ not applicable _____

1. Do you currently own your own house?

YES _____ NO _____

If NO please indicate when you plan to purchase a house and go to question 4 _____ years

2. When do you expect to replace your existing house?

_____ within the next 12 months
_____ the time period from 13-24 months
_____ from 3 to 5 years from now

3. Why will you replace your house?

_____ current house is no longer sound due to decay
_____ current house is no longer structurally sound
_____ current house too small
_____ current house needs costly renovations
_____ current house needs style changes
_____ other (please specify) _____

4. Which type of house do you prefer?

_____ wood post and beam (traditional)
_____ wood 2 by 4 (platform frame)
_____ hybrid (mix of post & beam and 2 by 4)
_____ steel or concrete
_____ pre-fabricated
_____ do not care

5. Are you aware of the growing concern over formaldehyde emissions in Japanese homes?

YES _____ NO _____

6. Would you be interested in a panel with 1/50th of the formaldehyde emission levels of government standards?

YES _____ NO _____

7 Would you be prepared to pay a small premium for such a panel?

YES _____ NO _____

8. Who do you expect to live in your new house?

_____ your immediate family (husband, wife and children)

_____ your extended family (husband, wife, children and parents)

9. How big a house do you expect to build or purchase?

_____ < 30 tsubo

_____ 30-39 tsubo

_____ 40-49 tsubo

_____ 50 tsubo or larger

10. Would an independent quality assurance label increase your level of confidence when purchasing...

	<u>YES</u>	<u>NO</u>
wood furniture	☐	☐
building systems	☐	☐
interior finish	☐	☐
outdoor furnishings	☐	☐

11. Would you feel more confident with a quality assurance label from... (check one)

... the country of manufacture ☐

... the country of purchase ☐

... does not matter ☐

12. When purchasing wood products, how important is it to you to know that the product has been tested to meet some recognized standard? (circle one)

not at all important 1 2 3 4 5 extremely important

13. Given the choice, would you prefer to see a quality assurance program certify... (check one)

... quality in the process (how well the product is manufactured) ☐

OR

... quality in the product (how well the product fulfills its intended function) ☐

14. How important are the following factors in determining the quality of wood products that you purchase?
(circle one for each factor, with 1 being not at all important and 5 being extremely important)

product performance	1	2	3	4	5
how does the product perform in its intended function?					
product features	1	2	3	4	5
what types of features does the product have relative to the competition?					
product reliability	1	2	3	4	5
if used properly, will the product operate without failure over a specified time?					
product conformance	1	2	3	4	5
is the product defect-free and does it meet with known standards?					
product durability	1	2	3	4	5
how much can the product be used before it needs to be fixed or replaced?					
product serviceability	1	2	3	4	5
is the product easy to maintain and is service speedy and dependable?					
product aesthetics	1	2	3	4	5
how does the product look, feel, etc. and is there a variety of styles?					
perceived quality	1	2	3	4	5
does the manufacturer have a reputation or a recognizable brand name?					

Questions for Designers for Interior Finish

1. Please rank the five most important of the following product attributes with number 1 being the most important.

_____	Material (metal, wood, plastic)
_____	Co'our
_____	Location of wood feature (e.g. moulding, flooring etc.)
_____	Health (emissions of harmful gasses)
_____	Durability (e.g. how long they will last)
_____	Source of supply
_____	Species in finish
_____	Maintenance
_____	Style

2. Please indicate the relative preference for the material used in your interior finish.

	Low preference					High preference	
solid wood	1	2	3	4	5	6	7
wood veneer over composite core	1	2	3	4	5	6	7
metal	1	2	3	4	5	6	7
plastic	1	2	3	4	5	6	7
combinations	1	2	3	4	5	6	7

3. Please rank the five most preferable locations for a wood interior finish item with 1 being the most preferred location.

_____ moulding
 _____ flooring
 _____ wainscoting (wall panels part way up from floor)
 _____ windows
 _____ doors
 _____ stairways
 _____ stair railings
 _____ cabinet doors
 _____ kitchen cabinets
 _____ bathroom cabinets

4. Please indicate what percent you expect the use of wood interior finish to change over the next five years in the places that you design.

	Increase (indicate %)	or	Decrease (indicate %)	or	Stay the Same
moulding	_____		_____		_____
flooring	_____		_____		_____
wainscoting	_____		_____		_____
windows	_____		_____		_____
doors	_____		_____		_____
stairways	_____		_____		_____
stair railings	_____		_____		_____
cabinet doors	_____		_____		_____
kitchen cabinets	_____		_____		_____
bathroom cabinets	_____		_____		_____

5. Would an independent quality assurance label increase your level of confidence when purchasing...
 (check YES or NO for each product type)

	<u>YES</u>	<u>NO</u>
wood furniture	☐	☐
building systems	☐	☐
interior finish	☐	☐
outdoor furnishings	☐	☐

6. Would you feel more confident with a quality assurance label from... (check one)
- ... the country of manufacture ☐
- ... the country of purchase ☐
- ... does not matter ☐

7. When purchasing wood products, how important is it to you to know that the product has been tested to meet some recognized standard? (circle one)
not at all important 1 2 3 4 5 extremely important

8. Given the choice, would you prefer to see a quality assurance program certify... (check one)
... quality in the process (how well the product is manufactured) ☐
OR
... quality in the product (how well the product fulfills its intended function) ☐

9. How important are the following factors in determining the quality of wood products that you purchase? (circle one for each factor, with 1 being not at all important and 5 being extremely important)

product performance	1	2	3	4	5
how does the product perform in its intended function?					
product features	1	2	3	4	5
what types of features does the product have relative to the competition?					
product reliability	1	2	3	4	5
if used properly, will the product operate without failure over a specified time?					
product conformance	1	2	3	4	5
is the product defect-free and does it meet with known standards?					
product durability	1	2	3	4	5
how much can the product be used before it needs to be fixed or replaced?					
product serviceability	1	2	3	4	5
is the product easy to maintain and is service speedy and dependable?					
product aesthetics	1	2	3	4	5
how does the product look, feel, etc. and is there a variety of styles?					
perceived quality	1	2	3	4	5
does the manufacturer have a reputation or a recognizable brand name?					